



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/510,999

10/12/2004

Pavel Koulik

APIT-7

6703

52450 7590 05/14/2008

KRIEG DEVAULT LLP
ONE INDIANA SQUARE
SUITE 2800
INDIANAPOLIS, IN 46204-2079

EXAMINER

ARANCIBIA, MAUREEN GRAMAGLIA

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

05/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/510,999	Applicant(s) KOULIK ET AL.	
	Examiner Maureen G. Arancibia	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-37 is/are pending in the application.
- 4a) Of the above claim(s) 30-32 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-29, 33 and 35-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 April 2008 has been entered.

Claim Status

2. At the outset, it is noted that the status of Claims 30-32 and 34 is incorrectly indicated in the amendment to the claims filed 26 September 2007. These claims stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 9 March 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 19, 20, 22-24, 27, 29, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over WIPO Publication WO 01/80607 A1 to Merard et al. in view of U.S. Patent 6,423,924 to Goloviatinskii et al. U.S. Patent Application**

Publication 2004/0035838 to Merard et al. will be referred to as an English language equivalent to this document.

In regards to Claim 19, Merard et al. teaches a device for treating the surface of containers 43 with a plasma, comprising a kinematic system (Figures 5 and 6) for the transport of the containers and a plurality of plasma generators 68 operating at atmospheric pressure (Paragraph 46), each generator adapted to treat one container at a time (Figure 6), the plasma generator comprising a treatment gas supply system (exposure to atmosphere; Paragraph 46) and an electrical power supply system (Figure 1) comprising at least an LC adapter (the circuit comprises transformers, which are inductive elements, and capacitors) adapted for supplying current in pulses. (Paragraphs 45-47)

The plurality of plasma generators 68 may be considered to be arranged in parallel, as broadly recited in the claim, in that they can treat simultaneously a plurality of containers, as broadly recited in the claim. During patent examination, the pending claims must be “given the broadest reasonable interpretation consistent with the specification.” Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)

Moreover, each of the plurality of plasma generators would be structurally capable of performing the intended use of carrying out a full treatment of one container, based on the user definition of what constitutes a “full treatment” in any desired process.

For example, a user may decide that a “full treatment” constitutes a single decontamination process for a particular use of the apparatus taught by Merard et al. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

Further in regards to Claim 19, and in regards to Claim 37, Merard et al. does not expressly teach that the plasma generator further comprises one external lower electrode for gripping the container, the lower electrode being provided with a rotational mechanism for rotating the container.

Goloviatinskii et al. teaches that a plasma generator can comprise an external lower electrode 11b for gripping a container, said lower electrode being provided with a rotational mechanism for rotating the container. (Figure 10f; at least Column 9, Line 33 - Column 10, Line 45)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Merard et al. for the plasma generator to *additionally* include an external lower electrode for gripping the container, with the lower electrode being provided with a rotational mechanism for rotating the container, as taught by Goloviatinskii et al. The motivation for making such a modification, as taught by

Goloviatinskii et al. (Column 9, Line 33 - Column 10, Line 45), would have been to add the capability to use the plasma generator to treat the *entire outside surface* of the container.

In regards to Claim 20, each generator 68 is provided as a column having a diameter "close to" the diameter of the opening of a container 43, *as broadly recited in the claim*. (Figure 6) Moreover, the apparatus taught by Merard et al. would be structurally capable of processing containers having openings with different diameters, to give a desired relationship between the diameter of the opening of the container and the diameter of the generator. It is well-settled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

In regards to Claim 22, the plasma generators 68 are placed side by side on a plate 71 on a carrousel 61 of the kinematic system, as broadly recited in the claim. (Figure 6)

In regards to Claim 23, the area under plate 71 may be considered to be an accumulation zone, in that three containers are grouped there during processing. The plurality of generators 68 are positioned above this system for a batch (two at a time) treatment of containers 43. (Paragraph 59)

In regards to Claim 24, Merard et al. teaches that the power supply system includes a current source (Paragraph 43), and that the gas supply system includes a gas distributor 37 for protective gas supply. (Paragraphs 46-47; Figure 1)

In regards to Claim 27, Merard et al. teaches pivoting guide (i.e. carousel) 61 for directing the loading of containers in the accumulation zone. (Figure 5)

In regards to Claim 29, Merard et al. teaches two compartmented complementary zones 59, 62 upstream and downstream respectively of the accumulation zone.

4. Claims 21, 25, 26, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merard et al. in view of Goloviatinskii et al. as applied to Claim 19 above, and further in view of U.S. Patent 6,041,734 to Raoux et al.

The teachings of Merard et al. and Goloviatinskii et al. were discussed above.

In regards to Claims 21, 25, and 36, the combination of Merard et al. and Goloviatinskii et al. does not expressly teach a control unit comprising a microcontroller that controls the power supply system to control the characteristics of the pulses of electric current, as recited in Claim 21; that the microcontroller controls the execution of a program for gas distribution to form a gaseous mixture constituting a treatment gas used in the plasma treatment of the containers, as recited in Claim 36; or that all of the microcontroller, current source (power supply), and gas distributor are controllable so as to provide a plasma treatment program for each container, individually, as recited in Claim 25.

Raoux et al. teaches a control unit comprising a microcontroller 85 that controls a power supply system to control the amplitude of pulses of electric current, the slope of

Art Unit: 1792

the leading edges of the pulses, their frequency, and the time elapsed between two successive pulses (i.e. duty ratio) (Column 14, Line 60 - Column 15, Line 2; Figure 18; Column 24, Lines 53-64) via a plasma control subroutine 168; and controls the execution of a program for gas distribution to form a gaseous mixture constituting a treatment gas used in plasma treatment via a process gas control subroutine 165 (ex. Column 13, Line 25 - Column 14, Line 10). Raoux et al. teaches that the microcontroller, the power supplies, and the gas distributors are controllable by different recipes so as to provide individual plasma treatment programs for individual processes. (Column 11, Line 52 - Column 12, Line 12)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Merard et al. and Goloviatinskii et al. to include a control unit comprising a microcontroller to control the power supply system to control the characteristics of the pulses of electric current, as recited in Claim 21; for the microcontroller to control the execution of a program for gas distribution to form a gaseous mixture constituting a treatment gas used in the plasma treatment of the containers, as recited in Claim 36; and for all of the microcontroller, current source (power supply), and gas distributor to be controllable so as to provide a plasma treatment program for each container, individually, as recited in Claim 25. The motivation for including a control unit comprising a microcontroller to control the power supply system to control the characteristics of the pulses of electric current, as taught by Raoux et al. (Column 24, Lines 50-53), would have been to allow a manufacturer to tailor plasma chemistry versus plasma density to further improve deposited film

Art Unit: 1792

characteristics. The motivation for using the microcontroller to control the execution of a program for gas distribution to form a gaseous mixture constituting a treatment gas used in the plasma treatment of the substrates, as taught by Raoux et al. (Column 13, Line 25 - Column 14, Line 10), would have been to allow for control of the gas supplied to the plasma based on a desired type of process to be performed. The motivation for having for all of the microcontroller, current source (power supply), and gas distributor be controllable so as to provide a plasma treatment program for each substrate, individually, as taught by Raoux et al. (Column 11, Line 52 - Column 12, Line 12), would have been to allow a user to select a desired type of process to be performed at any given time.

In regards to Claim 26, the combination of Merard et al., Goloviatinskii et al. and Raoux et al. does not expressly teach that the current source, the gas distributor, and the microcontroller are provided in the same housing.

However, Raoux et al. further teaches that all components of a processing system can be provided in a common housing (*mainframe unit*) 95. (Column 10, Line 61 - Column 11, Line 19; Figure 6)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by the combination of Merard et al., Goloviatinskii et al., and Raoux et al. to have the current source, the gas distributor, and the microcontroller be provided in the same housing. The motivation for making such a modification, as taught by Raoux et al. (Column 10, Line 65 - Column 11, Line 19), would have been to contain all

components of the processing system in a mainframe unit that can provide electrical, plumbing, and other support functions for the system.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merard et al. in view of Goloviatinskii et al. as applied to Claim 19 above, and further in view of Japanese Kokai 2002-255123A to Hasegawa et al. (from Applicant's IDS). The following rejection will refer to the Figures and/or English Machine Translation (EMT) of Hasegawa et al.

The teachings of Merard et al. and Goloviatinskii et al. were discussed above.

The combination of Merard et al. and Goloviatinskii et al. does not expressly teach the features of the kinematic system as recited in Claim 28.

Hasegawa et al. teaches that a treatment zone of a kinematic system (Figures 1 and 2) comprises rows for storing rows of containers P in such a manner that the treatment of the containers is carried out therein row by row (Figure 1), as and when the rows are filled with containers. (Figures 1 and 2)

It would have been obvious to one of ordinary skill in the art to modify the kinematic system taught by Merard et al. and Goloviatinskii et al. as taught by Hasegawa et al. to carry out the processing of containers row by row. One of ordinary skill in the art would have been motivated to make such a modification in order to carry out batch processing of multiple containers at a time, thereby improving system throughput and overall process efficiency.

6. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merard et al. in view of Goloviatinskii et al. as applied to Claim 19 above, and further in view of U.S. Patent 5,341,068 to Nerone.

The teachings of Merard et al. and Goloviatinskii et al. were discussed above. Specifically, Merard et al. teaches that the power supply system comprises a high voltage direct current source 36 (Figure 1), and that plasma discharges are formed to treat the inner surfaces of the containers to be treated. Merard et al. teaches that a computer (*initiation device*) 29 modulates the current. (Figure 1 ; Paragraphs 42 and 46)

The combination of Merard et al. and Goloviatinskii et al. does not expressly teach that each generator is provided with a field transistor system having a CR amplitude-phase circuit.

Nerone teaches that a generator (*lamp 12*) has a power supply system comprising a high voltage direct current source (*from rectifier circuit 24*), and a field transistor system 40 comprising field transistors Q1, Q2 and a CR amplitude-phase circuit (*multiple capacitors C and resistors R*), as broadly recited in the claim. (Figures 2 and 3)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Merard et al. and Goloviatinskii et al. to provide each generator with a field transistor system having a CR amplitude-phase circuit, as taught by Nerone. The motivation for making such a modification, as taught by Nerone (Column 1, Lines 22-28), would have been to enjoy the benefits of an electronic ballast circuit that can

achieve the necessary starting and operating characteristics for a discharge generator without generating a significant amount of electromagnetic interference and without experiencing significant dynamic losses.

It is considered that the apparatus taught by the combination of Merard et al., Goloviatinskii et al. and Nerone would be inherently structurally capable of performing the intended use of producing a plasma discharge that could have the form of a “network of filaments” as broadly recited in the claim, based on the excitement of the surface to be processed by the plasma discharge and the selected process settings. This recitation of intended use is not considered to structurally distinguish the claimed invention from the apparatus taught by the combination of Merard et al. and Nerone. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

7. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merard et al. in view of Goloviatinskii et al. as applied to Claim 19 above, and further in view of U.S. Patent Application Publication 2003/0164280 to Delaporte et al.

The teachings of Merard et al. and Goloviatinskii et al. were discussed above.

The combination of Merard et al. and Goloviatinskii et al. does not expressly teach the details of the kinematic system as recited in Claim 35.

Delaporte et al. teaches that a kinematic system can comprise pneumatic transport channels 6, formed in part by guide rails 7, in which containers B are moved by an air stream (Paragraph 20). Guide rails 7, which form part of the pneumatic transport channels are moveable based on their position so as to have a desired curvature to guide the containers B. (Paragraphs 20-22)

It would have been obvious to one of ordinary skill in the art to modify the apparatus taught by Merard et al. and Goloviatinskii et al. to use a kinematic system comprising pneumatic transport channels formed in part by moveable guide rails, as taught by Delaporte et al. The motivation for making such a modification, as taught by Delaporte et al. (Paragraphs 1-3 and 6-10), would have been to transport light articles, such as plastic bottles, along conveyers that can be curved.

Note that the guide rails forming part of the pneumatic air channels taught by the combination of Merard et al., Goloviatinskii et al. and Delaporte et al. would be movable in a plasma treatment zone as in other areas of the kinematic system, and would enable access of the generator electrodes to the containers by successfully guiding the containers to the generators along curved conveyers, *as broadly recited in the claim.*

Response to Arguments

8. Applicant's arguments filed 14 April 2008 have been fully considered but they are not persuasive.

In response to applicant's argument that neither Merard et al. or Nerone expressly teaches forming a plasma discharge in the form of a network of filaments, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Contrary to Applicant's assertion, Examiner maintains that the recitation that electricity is supplied "for a discharge in the form of a 'network of filaments'" is a recitation of *intended use* of the claimed *apparatus*, which the plasma generator taught by the combination of Merard et al., Goloviatinskii et al., and Nerone et al. would be structurally capable of performing, based on the excitement of the surface to be processed by the plasma discharge and *the selected process settings*. The combination of Merard et al., Goloviatinskii et al., and Nerone et al. teaches all of the structural features of the claimed invention, and is believed to be structurally capable of performing in the same manner as recited in the claims. Put another way, Examiner is unaware of any additional necessary structural feature that must be provided in order for the claimed plasma discharge to be generated. Rather, the generation of a plasma discharge having a "network of filaments" is believed to be due merely to selection of desirable process settings, such as power, current, and tuning of the individual field transistor systems.

In regards to Applicant's argument that Merard et al. teaches away from any use of an external lower electrode, this argument is not persuasive. Merard et al. does teach that the use of an external electrode "closely following the shape of the container

Art Unit: 1792

to be disinfected" on the *inside* of the container can be undesirably restrictive, since the resulting apparatus is limited to use with only containers having the same shape as the external electrode. However, while Merard et al. teaches what Merard et al. considers to be a *better* way of providing plasma to the *inside* of a container, this is not considered to translate into a teaching *away* of any use of an external electrode. Meanwhile, the newly applied reference to Goloviatinskii et al. provides a strong motivation for providing an external electrode (which corresponds to but need not necessarily "closely follow" the shape of a container to be processed), in order to provide plasma treatment for the *outside* of the container. Providing such an external electrode with rotational mechanism as taught by Goloviatinskii et al. would have been obvious to one of ordinary skill in the art, in order to *expand* rather than *restrict* the possible types of plasma treatment to be performed by the plasma apparatus; i.e. to extend the application to plasma treating of the outside as well as the inside of the container.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maureen G. Arancibia whose telephone number is (571)272-1219. The examiner can normally be reached on core hours of 10-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Maureen G. Arancibia/
Examiner, Art Unit 1792

/Parviz Hassanzadeh/
Supervisory Patent Examiner, Art Unit 1792